Technology Opportunity

Sensors – Chemical

Ultrasonic Leak Detection Using an Elliptical Collecting Horn

The National Aeronautics and Space Administration (NASA) seeks to license an elliptical horn attachment for ultrasonic leak detection devices. Developed at the John F. Kennedy Space Center (KSC), this innovation is a tool that attaches directly to any commercially available hand-held or fixed leak detector and offers significant improvement to specific leak-detection applications. This device greatly enhances the ability to detect ultrasonic leaks occurring 3 to 12 inches from the source. An elliptical horn is significantly more sensitive within this range than parbolic horns or bare sensors. This enhanced capability provides the potential to save money, increase safety, and conserve energy.

Potential Commercial Uses

Companies who manufacture leak detection equipment may wish to license this technology and incorporate it as an accessory to complement their existing products.

Applications of this technology include but are not limited to:

- Detection of leaks in industrial pressure and vacuum systems, such as pipelines, underground utilities, air-conditioning systems, power transmission lines, and pressurized overhead telephone cables.
- Location of leaks on flight hardware and in fuel tank tests, as well as ground support equipment for commercial and military aircraft.

Benefits

- Increases personnel safety and equipment maintainability.
- Helps reduce business costs by detecting compressed air system leaks.
- Supports energy conservation.
- Adaptable to many types of hand-held and fixed ultrasonic leak detectors.

National Aeronautics and Space Administration
John F. Kennedy Space Center, FL

The Technology

This invention was developed at the John F. Kennedy Space Center Optical Instrumentation Laboratory. Several other ultrasonic leak detection inventions were developed here, including two that have been licensed to industry. This device was developed to provide a highly sensitive listening device that would detect small gaseous leaks at a distance of a few inches to a range of 12 to 15 inches from the source of the leak. Bare sensors and contact sensors are adequate for distances up to 3 inches, and sensors mated to parabolic sound concentrating horns are useful for ranges above 12 to 15 inches. The elliptical collecting horn is ideal for focusing ultrasonic waves that reflect from the internal surface onto a detector located at one of the focal points of the ellipse (at the opposite end of the opening). Depending on the shape of the ellipse, the distance to the source, the size of the opening, and other parameters, the elliptical shape can provide up to 10 times the sensitivity of a bare sensor or a parabolic collector.

Options for Commercialization

NASA seeks qualified companies to commercialize the technology Ultrasonic Leak Detection Using an Elliptical Collecting Horn. This and other technologies are made available by the KSC Technology Commercialization Office through a variety of licensing and partnering agreements. These include patent and copyright licenses, cooperative agreements, and reimbursable and nonreimbursable Space Act Agreements.

Contact

If your company is interested in the technology Ultrasonic Leak Detection Using an Elliptical Collecting Horn or if you desire additional information, please reference Case Number KSC-12082 and contact:

Lynne Henkiel
SERTTC Industry Liaison
Technology Commercialization Office
Mail Code: YA-C1
Kennedy Space Center, FL 32899
Telephone: (321) 867-8130
Fax: (321) 867-2050
Lynne.Henkiel-1@ksc.nasa.gov

Commercialization Checklist

- Patent pending
- U.S. Patent
- Copyrighted
- ✔ Available for licensing
- Available for no-cost transfer
- Seeking industry partner for further codevelopment

KSC-12082/TOP10-59/01-03/2.3